

## Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE  
For High-Fidelity Audio-Amplifier Ap-  
plications Critical as to Noise and Hum

### GENERAL DATA

#### Electrical:

##### Heater Characteristics and Ratings:

Voltage (AC or DC) . . . . .  $6.3 \pm 0.6$  volts  
Current at heater volts = 6.3 . . . . . 0.450 amp

Peak heater-cathode voltage (Each  
Unit):

Heater negative with  
respect to cathode . . . . . 200 max. volts

Heater positive with  
respect to cathode . . . . . 200<sup>a</sup> max. volts

##### Direct Interelectrode Capacitances:<sup>b</sup>

##### Triode Unit:

Grid to plate . . . . . 2 pf  
Grid to cathode and heater . . . . . 2.3 pf  
Plate to cathode and heater . . . . . 0.3 pf

##### Pentode Unit:

Grid No.1 to plate . . . . . 0.06 max. pf  
Grid No.1 to cathode & internal  
shield & grid No.3, grid No.2,  
and heater . . . . . 5 pf  
Plate to cathode & internal shield  
& grid No.3, grid No.2, and  
heater . . . . . 2 pf

##### Equivalent-Hum and Noise Voltage (Referenced to Grid):

##### Triode Unit

Average Value (RMS) . . . . . 10 microvolts  
Maximum Value (RMS) . . . . . 50 microvolts

Measured in "true rms" units under the following conditions:  
heater volts = 6.3 ac, center-tap of heater transformer con-  
nected to ground, plate-supply volts = 250, plate load resis-  
tor (megohms) = 0.1, cathode resistor (ohms) unbypassed = 1500,  
grid resistor (megohms) = 0.05, and amplifier covering fre-  
quency range between 25 and 10,000 cps.

##### Pentode Unit

Average Value (RMS) . . . . . 15 microvolts  
Maximum Value (RMS) . . . . . 35 microvolts

Measured in "true rms" units under the following conditions:  
heater volts = 6.3 ac, center-tap of heater transformer con-  
nected to ground, plate-supply volts = 250, plate-load resis-  
tor (megohms) = 0.22, grid-No.2 supply volts = 250; grid No.2  
voltage divider: resistor (megohm) from grid No.2 to B+ = 0.68,  
resistor (megohm) from grid-No.2 to ground = 0.33; bypass ca-

← Indicates a change.



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capacitor ( $\mu\text{f}$ ) from grid No. 2 to cathode = 0.1; cathode resistor (ohms unbypassed) = 680; grid No. 1 resistor (megohm) = 0.27; and amplifier covering frequency range between 25 and 10,000 cps.

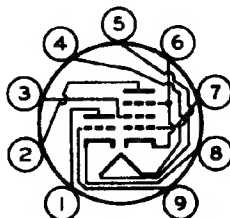
## Characteristics, Class A<sub>1</sub> Amplifier:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage. . . . .	215	100 220	volts
Grid-No. 2 Supply Voltage. . . .	—	50 130	volts
Grid-No. 1 Voltage. . . . .	-8.5	—	volts
Cathode Resistor. . . . .	—	1000 62	ohms
Amplification Factor. . . . .	17	—	
Plate Resistance (Approx.). . . .	0.0081	1 0.4	megohm
Transconductance. . . . .	2100	1500 7000	$\mu\text{mhos}$
Plate Current. . . . .	9	1.1 12.5	ma
Grid-No. 2 Current. . . . .	—	0.35 3.5	ma
Grid-No. 1 Voltage (Approx.) for plate $\mu\text{a} = 10$ . . . . .	-40	-4 —	volts

## Mechanical:

Operating Position. . . . . Any  
Type of Cathodes. . . . . Coated Unipotential  
Maximum Overall Length. . . . . 2-3/16"  
Maximum Seated Length. . . . . 1-15/16"  
Length, Base Seat to Bulb Top (Excluding tip) . . 1-9/16"  $\pm$  3/32"  
Diameter. . . . . 0.750" to 0.875"  
Dimensional Outline . . . . . See *General Section*  
Bulb. . . . . T6-1/2  
Base. . . . . Small-Button Noval 9-Pin (JEDEC No. E9-1)  
Basing Designation for BOTTOM VIEW. . . . . 9JT

Pin 1—Triode  
Plate  
Pin 2—Pentode  
Plate  
Pin 3—Pentode  
Grid No. 2  
Pin 4—Heater  
Pin 5—Heater



Pin 6—Pentode  
Cathode,  
Grid No. 3,  
Internal  
Shield  
Pin 7—Pentode  
Grid No. 1  
Pin 8—Triode  
Cathode  
Pin 9—Triode  
Grid

## AMPLIFIER — Class A<sub>1</sub>

### Maximum Ratings, Design-Maximum Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE . . . . .	330 max.	330 max.	volts
GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE. . . . .	—	330 max.	volts
GRID-No. 2 VOLTAGE . . . . .	—	See <i>Grid-No. 2 Input</i>	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No. 1 (CONTROL-GRID) VOLTAGE: Positive-bias value . . . . .	0 max.	0 max.	volts



	<i>Triode Unit</i>	<i>Pentode Unit</i>	
GRID-NO.2 INPUT:			
For grid-No.2 voltages up to 165 volts . . . .	-	0.6 max.	watt
For grid-No.2 voltages between 165 and 330 volts . . . . .	-	See <i>Grid-No.2 Input Rating Chart</i> at front of Receiving Tube Section	
PLATE DISSIPATION . . . . .	2.4 max.	3 max.	watts

**Maximum Circuit Values:**

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance: <sup>c</sup>			
For fixed-bias operation . . . . .	0.5 max.	0.25 max.	megohm
For cathode-bias operation . . . . .	1 max.	1 max.	megohm

<sup>a</sup> The dc component must not exceed 100 volts.

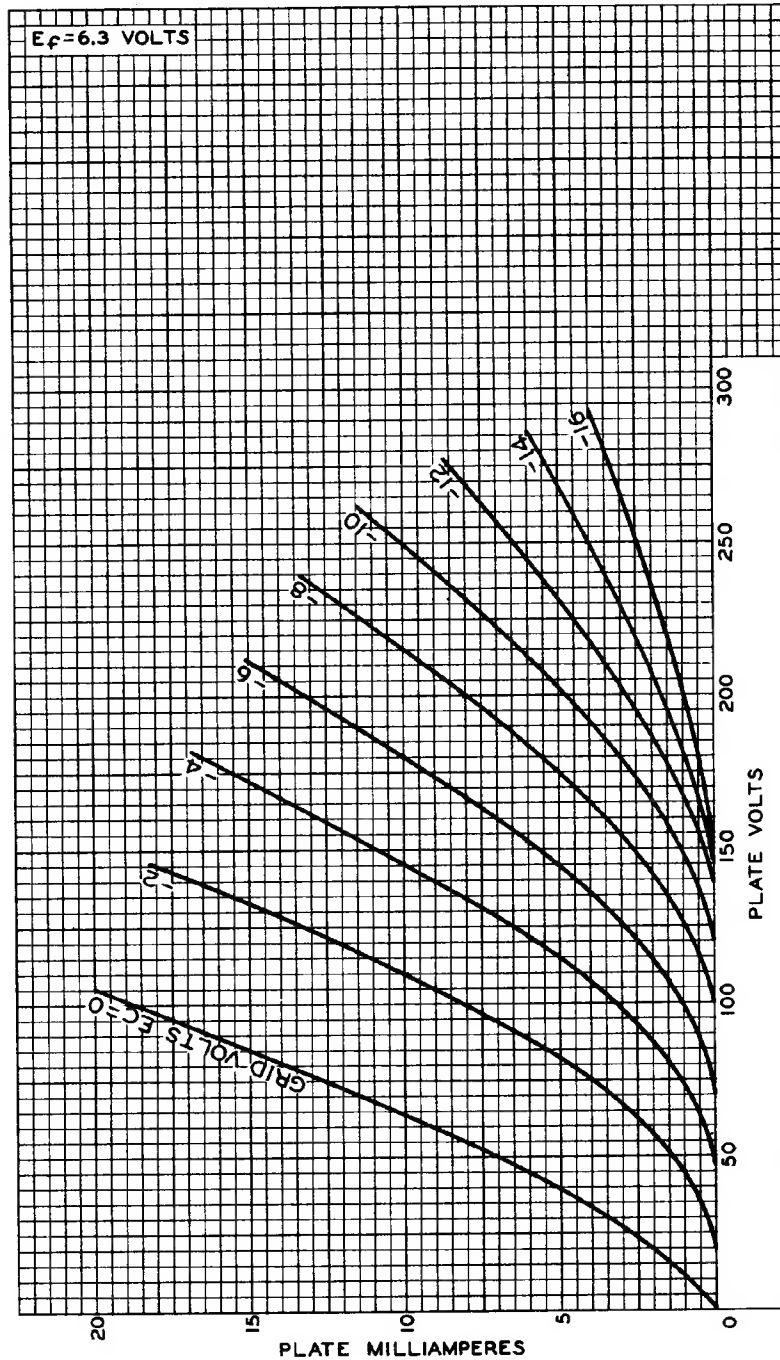
<sup>b</sup> Without external shield.

<sup>c</sup> If either unit is operated at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.



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## AVERAGE PLATE CHARACTERISTICS Triode Unit



92CM-9693

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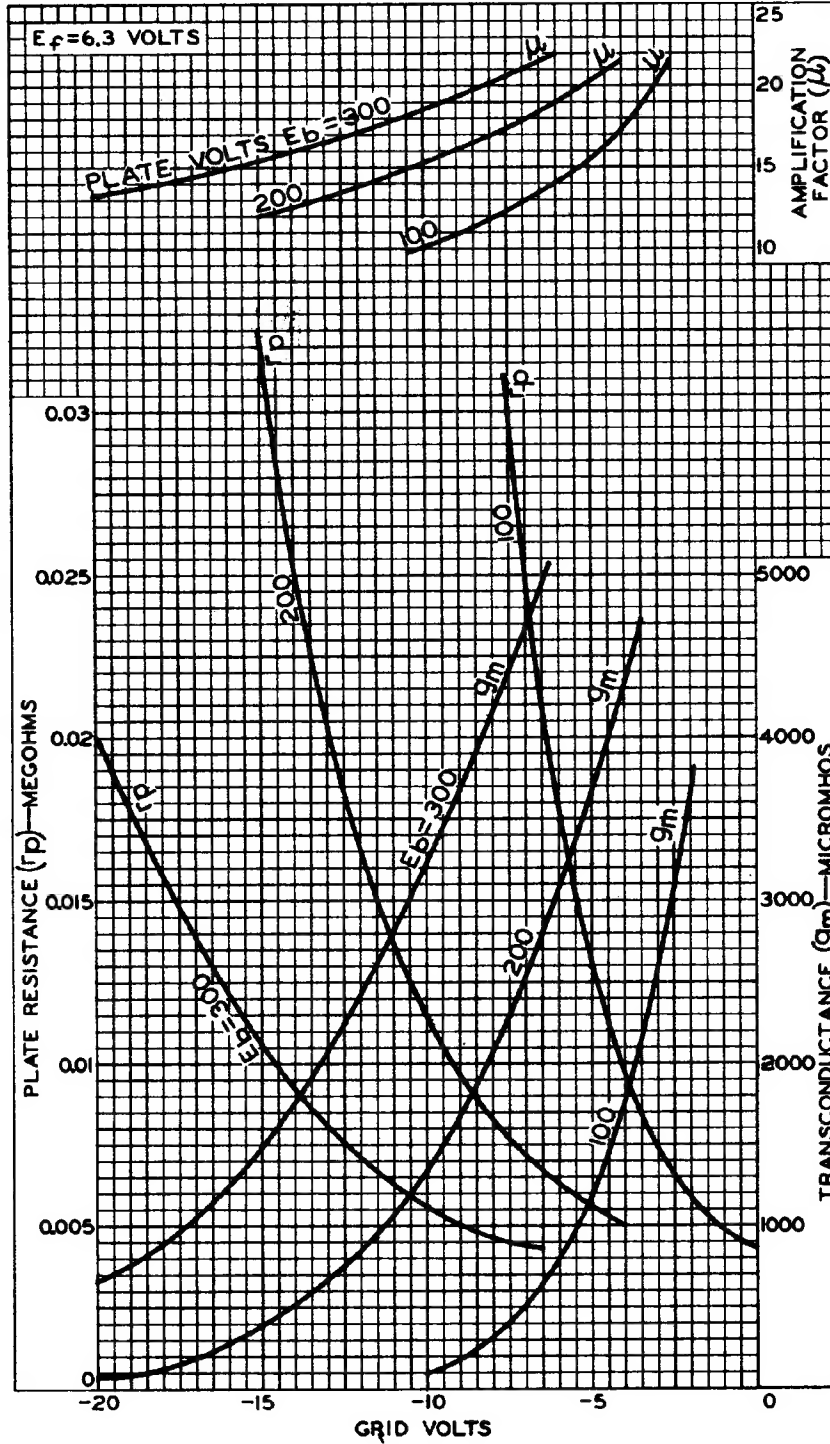




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# AVERAGE CHARACTERISTICS TRIODE UNIT



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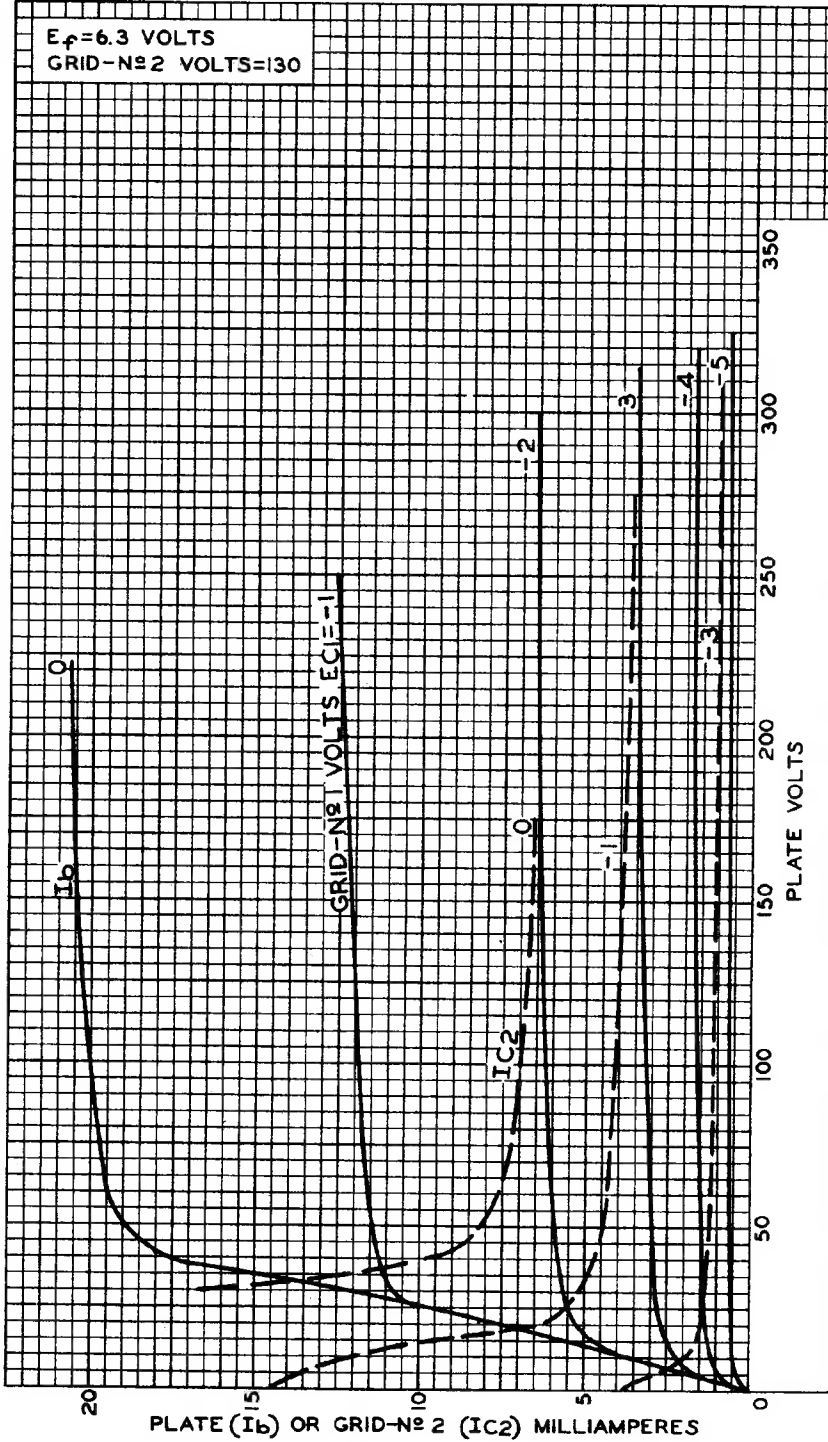
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# AVERAGE CHARACTERISTICS PENTODE UNIT



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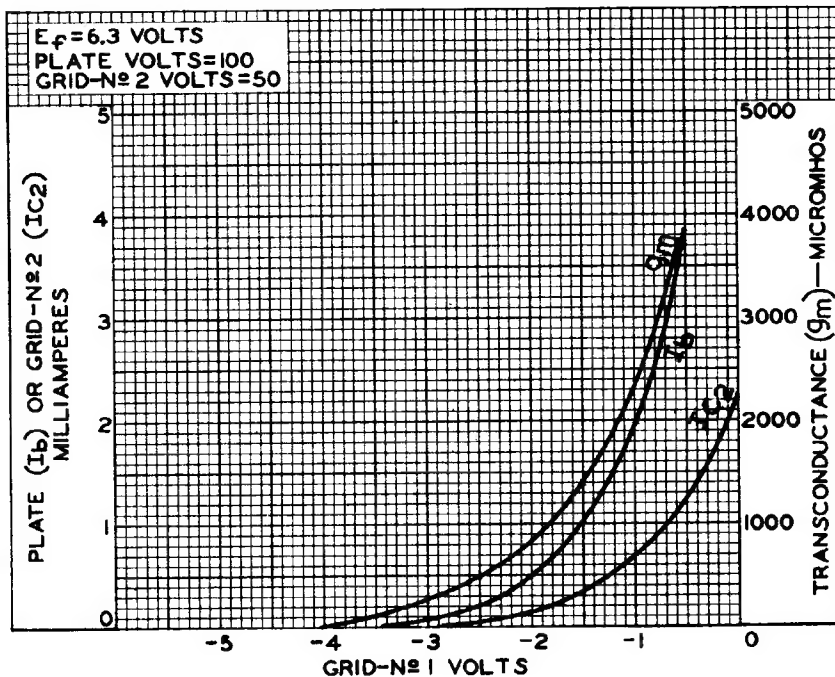
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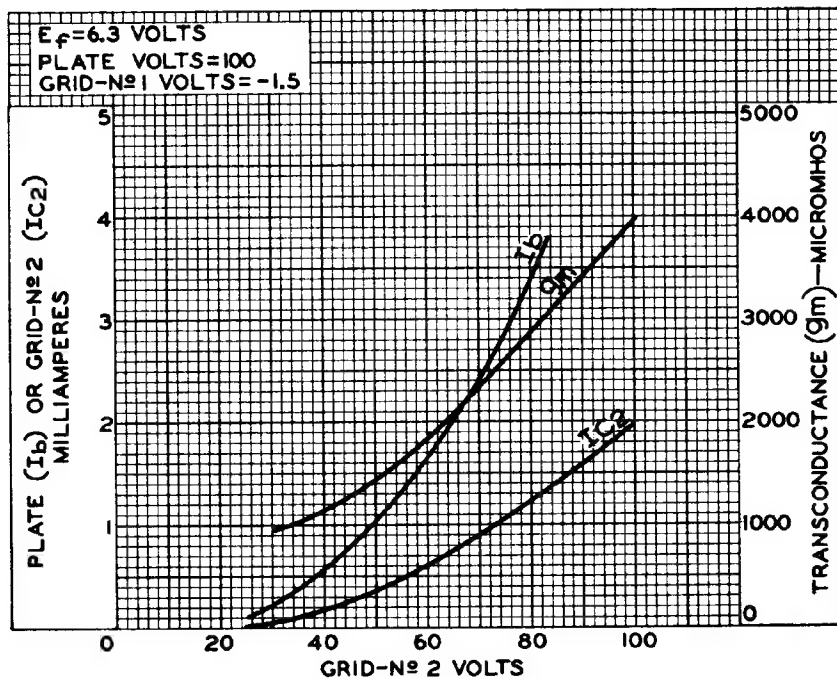
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# AVERAGE CHARACTERISTICS PENTODE UNIT

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